

**AMENDMENTS IN THE CLAIMS**

Please cancel claims 13 through 22 without prejudice or disclaimer as to their subject matter by this amendment, amend claims 1-6, 8 and 10 by this amendment and newly add claims 23-36 by this amendment as follows:

1           1. (Currently Amended) A bubble-jet type ink jet printhead, comprising:  
2           a substrate ~~integrated with~~ having a manifold ~~for supplying ink~~ and an ink chamber formed  
3 therein ~~connected with the manifold for containing ink to be ejected~~, said manifold and said ink  
4 chamber being connected to each other and both being formed as recesses in a top surface ~~are~~  
5 ~~recessed from the same surface~~ of the substrate;  
6           a nozzle plate located on said a top surface of said substrate to cover the manifold and the  
7 ink chamber, said nozzle plate being perforated by a nozzle hole located directly above a center  
8 portion of said ink chamber;  
9           a heater being disposed on the nozzle plate and being disposed around ~~surrounding~~ the nozzle  
10 hole on the nozzle plate; and  
11           electrodes electrically connected ~~with to~~ to the heater, ~~for applying current to the heater, wherein~~  
12 said ink chamber is forming a substantially concave surface in said substrate.

1           2.(Currently Amended) The printhead of claim 1, wherein said ink chamber is ~~substantially~~  
2 being essentially hemispherical in shape.

1           3.(Currently Amended) The printhead of claim 2, further comprising an ink channel ~~located~~  
2 disposed in said top surface of said substrate between said manifold and said ink chamber, said ink

3 channel being integral with and connecting said manifold with said ink chamber, ~~said ink channel~~  
4 ~~is recessed from the same surface of the substrate to be integrated with the substrate.~~

1 4.(Currently Amended) The printhead of claim 3, ~~wherein said ink channel is shallower than~~  
2 ~~said ink chamber~~ said ink chamber being formed deeper in said top surface of said substrate than said  
3 ink channel.

1 5. (Currently Amended) The printhead of claim 3, ~~further comprising a bubble keeping~~  
2 ~~portion projecting higher than a bottom of said ink channel where said ink channel joins said ink~~  
3 ~~chamber~~ wherein a lip is formed in said substrate between said ink chamber and said manifold.

1 6.(Currently Amended) The printhead of claim 1, ~~wherein the ink chamber has a~~ having an  
2 elliptic cross section, and one side of the semimajor axis of said ink chamber is directly joined to  
3 ~~intercepts~~ said manifold.

1 7.(Original) The printhead of claim 6, wherein said heater is elliptic in shape, conforming  
2 to the shape of the ink chamber having a elliptic cross section.

1 8.(Currently Amended) The printhead of claim 1, wherein the nozzle plate comprises:  
2 an insulating layer covering said substrate, wherein an opening for an ink chamber and an  
3 opening for said manifold are formed at positions corresponding to the center portion of the ink  
4 chamber and said manifold, respectively; and  
5 a protective layer covering said insulating layer and covering said opening ~~of~~ for said

6 manifold, said protective layer having an opening above said ink chamber serving as said nozzle hole  
7 for said printhead.

1 9.(Original) The printhead of claim 8, wherein said protective layer is comprised of a  
2 polyimide film.

1 10.(Currently Amended) The printhead of claim 1, further comprising a bubble guide and  
2 a droplet guide, said droplet guide being an extension of said nozzle hole with walls extending  
3 towards a bottom surface of said ink chamber, said bubble guide being a gap in said substrate near  
4 said heater and exterior to said droplet guide, said bubble guide providing a space for a bubble to  
5 grow inside said ink chamber.

1 11.(Original) The printhead of claim 1, wherein the heater is “C” shaped and the electrodes  
2 are coupled to both ends of the “C” shaped heater, respectively.

1 12.(Original) The printhead of claim 2, wherein the heater is “O” shaped and the electrodes  
2 are electrically coupled to two diametrically opposite points of said “O” shaped heater, respectively.

13-22. (Canceled)

1 23. (New) The printhead of claim 1, said ink chamber and said manifold not perforating said  
2 substrate.

1           24. (New) The printhead of claim 1, said substrate being absent any perforations through said  
2           substrate.

1           25. (New) An ink jet printhead, comprising:  
2           an ink supply path formed in one surface of said substrate, said ink supply path being  
3           connected to a plurality of ink chambers formed in said one surface of said substrate;  
4           a nozzle plate disposed on said one surface of said substrate, said nozzle plate being  
5           perforated by a plurality of nozzle holes, each nozzle hole corresponding to a corresponding one of  
6           said plurality of ink chambers; and  
7           a plurality of heater resistors, each one of said plurality of heater resistors corresponding to  
8           corresponding ones of said plurality of ink chambers, each heater resistor formed on said nozzle  
9           plate, each heater resistor disposed above a corresponding ink chamber.

1           26. (New) The printhead of claim 25, said ink supply path comprising a manifold extending  
2           along a length of said one surface of said substrate, said manifold being connected to a plurality of  
3           ink channels formed in said one surface in said substrate, each of said plurality of ink channels being  
4           connected to a corresponding one of said plurality of ink chambers, wherein neither of said plurality  
5           of ink chambers, said plurality of ink channels and said manifold perforates said substrate.

1           27. (New) The printhead of claim 25, said substrate having ink feed grooves at edges of said  
2           substrate to supply ink to said ink supply path.

1           28. (New) The printhead of claim 25, further comprising a plurality of tubing segments

2 formed on a side of said nozzle plate facing said substrate, each of said plurality of tubing segments  
3 corresponding to corresponding ones of said plurality of nozzle holes, said tubing segments serving  
4 to extend said corresponding nozzle holes from said side of said nozzle plate facing said substrate  
5 towards a bottom of corresponding ink chambers formed in said one surface of said substrate.

1 29. (New) The printhead of claim 25, each of said plurality of ink chambers having an  
2 essentially bowl-shape.

1 30. (New) The printhead of claim 29, said bowl shape being essentially an outer portion of  
2 a hemisphere in shape.

1 31 (New) An ink jet printhead, comprising:  
2 an ink supply path formed in one surface of said substrate connected to a plurality of ink  
3 chambers formed in said one surface of said substrate;

4 a nozzle plate having a top side and a bottom side, said bottom side of said nozzle plate  
5 facing said one surface of said substrate, said nozzle plate being perforated by a plurality of nozzle  
6 holes, each nozzle hole corresponding to a corresponding one of said plurality of ink chambers;

7 a plurality of heater resistors, each one of said plurality of heater resistors corresponding to  
8 corresponding ones of said plurality of ink chambers; and

9 a plurality of nozzle hole extensions protruding from said bottom side of said nozzle plate  
10 to bottoms of corresponding ones of said plurality of ink chambers.

1 32. (New) The ink jet printhead of claim 31, each nozzle hole having an essentially circular

2 cross section, each nozzle hole extension having a shape of a hollow, cylindrical tube having an inner  
3 cross section that is similar to said circular cross section of each nozzle hole.

1 33. (New) The ink jet printhead of claim 31, each ink chamber having an essentially  
2 hemispherical cross section.

1 34. (New) The printhead of claim 31, each ink chamber having an essentially crescent shape.

1 35. (New) The printhead of claim 32, each ink chamber having an essentially crescent shape.

1 36. (New) The printhead of claim 32, each ink chamber having an essentially crescent shape  
2 that conforms to a shape of a bubble being formed from a circular-shaped heater, each nozzle hole  
3 extension ending near a middle portion of each crescent-shaped ink chamber.